

AMENDMENTS

In the Claims:

Please enter the following replacement claims, pursuant to 37 C.F.R. § 1.121(c), each replacement claim number replaces the correspondingly numbered prior pending claim. All pending claims, whether added, rewritten, cancelled or amended, have been reproduced below for the convenience of the Examiner. Also included is a marked-up version of the prior pending claims showing the amendments made thereto.

Please amend the claims as follows:

We claim:

- C¹
12. (TWICE AMENDED) An assembly comprising:
a heat-generating device attached to a printed circuit board (PCB), and a thermal management system, the thermal management system comprising a heat sink having an interior lumen, and a coolant circulation channel loop, wherein one part of the loop is formed in a layer of the PCB, and the coolant circulation channel loop being in fluid communication with the heat sink lumen.
13. (ORIGINAL) The assembly of claim 12, further comprising a heat sink, the channel including a portion in thermal contact with the heat sink.
14. (ORIGINAL) The assembly of claim 12, further comprising a pump arranged for circulating a coolant through the channel.
15. (ORIGINAL) The assembly of claim 12, wherein the PCB is a multi-layer PCB, and wherein a portion of the channel is formed by removal of portions of one or more layers of the PCB.
16. (ORIGINAL) The assembly of claim 12, wherein the PCB is a multi-layer PCB, and wherein a portion of the channel is formed by coinciding vias located in adjacent layers of the PCB.

17. (ORIGINAL) The assembly of claim 12, wherein the channel carries a gas coolant.

18. (ORIGINAL) The assembly of claim 12, wherein the channel carries a liquid coolant.

19. (ORIGINAL) The assembly of claim 12, wherein a portion of the channel is formed by a surface of the device, so as to provide direct contact between the device and a coolant carried in the channel.

*Cond
C1*
20. (ORIGINAL) The assembly of claim 19, wherein the device comprises a transistor die attached to a mounting flange, the mounting flange attached to the PCB mounting area and comprising the surface forming the respective portion of the channel.

21. (ORIGINAL) The assembly of claim 12, wherein the device comprises a transistor die attached to the PCB mounting area.

22. (ORIGINAL) The assembly of claim 19, wherein the device comprises a transistor die attached to the PCB mounting area, the transistor die comprising the surface forming the respective portion of the channel.

Please add the following claims:

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²⁴
23. (NEW) An assembly comprising:

a heat-generating device attached to a printed circuit board (PCB), and a thermal management system, the thermal management system comprising a heat sink having an interior lumen, a coolant circulation channel at least partially formed in a layer of the PCB, the coolant circulation channel being in fluid communication with the heat sink lumen, and a pump arranged for circulating a coolant through the channel.

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24. (NEW) The assembly of claim 23, further comprising a heat sink, the channel including a portion in thermal contact with the heat sink.

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~~25~~. (NEW) The assembly of claim 23, wherein the PCB is a multi-layer PCB, and wherein a portion of the channel is formed by removal of portions of one or more layers of the PCB.

²⁷
~~26~~. (NEW) The assembly of claim 23, wherein the PCB is a multi-layer PCB, and wherein a portion of the channel is formed by coinciding vias located in adjacent layers of the PCB.

²⁸
~~27~~. (NEW) The assembly of claim 23, wherein the channel carries a gas coolant.

²⁹
~~28~~. (NEW) The assembly of claim 23, wherein the channel carries a liquid coolant.

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~~29~~. (NEW) The assembly of claim 23, wherein a portion of the channel is formed by a surface of the device, so as to provide direct contact between the device and a coolant carried in the channel.

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~~30~~. (NEW) The assembly of claim 23, wherein the device comprises a transistor die attached to a mounting flange, the mounting flange attached to the PCB mounting area and comprising the surface forming the respective portion of the channel.

³²
~~31~~. (NEW) The assembly of claim 23, wherein the device comprises a transistor die attached to the PCB mounting area.

³³
~~32~~. (NEW) The assembly of claim 23, wherein the device comprises a transistor die attached to the PCB mounting area, the transistor die comprising the surface forming the respective portion of the channel.

³⁴
~~33~~. (NEW) The assembly of claim 23, the PCB comprising a plurality of device mounting areas for attaching heat producing devices, the cooling channel having a portion in a vicinity of each mounting area.